IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS: Barbara Chabut and Wen-Feng Liu

APPLICATION NO. 10/679,871 Confirmation No. 3835

FILED: October 6, 2003 Examiner: Robert E. Seller

ATTORNEY DOCKET NO. P26,257-B USA Group Art Unit: 1712

TITLE: VINYL ESTER ADHESIVE COMPOSITIONS

MAIL STOP APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: Board of Patent Appeals and Interferences

APPELLANTS' BRIEF

This Appeal Brief is pursuant to the January 10, 2008 Notice of Appeal. We also submit a petition for a two month extension of time to file the brief and the associated fee. We also include the $510.00 Appeal Brief filing fee required under 37 C.F.R. §1.17(f). If any other fees are required to enter this Brief, please charge them to Deposit Account No. 19-5425.

1. REAL PARTY IN INTEREST

This application has been assigned to Illinois Tool Works, Inc. having its principle place of business at 3600 West Lake Ave, Glenview, Illinois. Accordingly, Illinois Tool Works, Inc. is the real party in interest.

2. RELATED APPEALS AND INTERFERENCES

None.

3. STATUS OF CLAIMS

A. Claims cancelled: 2-5, 16-45

B. Claims withdrawn from consideration but not cancelled: None

C. Claims pending: 1, and 6-15.

D. Claims allowed: None

E. Claims objected to: None.

E. Claims rejected: 1, and 6-15.

F. Claims appealed: 1, and 6-15.

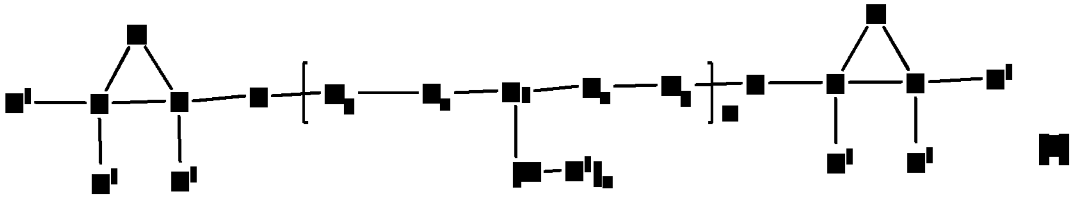
Appealed claims 1 and 6 to 15 as currently pending are attached in the Claims Appendix.

4. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 1 having an independent basis for allowance is as follows *(with specification support noted in parenthetical italics)*:

Claim 1: A curable adhesive composition for anchoring materials in or to concrete or masonry *(page 5, last paragraph)* comprising:

a. a polymerizable vinyl ester *(page 9, last paragraph)* comprising the reaction product *(page 9, last paragraph)* of an epoxy compound *(page 9, last paragraph)* and a compound containing an ethylenically unsaturated group *(page 9, last paragraph)*, said epoxy compound corresponding to formula (I),



wherein

Ar is substituted or unsubstituted aryl,

R is substituted or unsubstituted divalent radical derived from alkyl, oxyalkyl, arylalkyl, or oxyalkylaryl, alkyl or arylalkyl,

R^1 is independently H or R,

for each R_x, x is independently 0 or 1,

for each O_y, y is independently 0 or 1, provided that x and y are not both zero,

for each $(O\text{-}R^1)_z$, z is independently 0 to 4, and

n is from 1 to 5 *(page 12, 1st paragraph);*

wherein said polymerizable vinyl ester is present in the composition in amounts of from about 10 wt% to about 25 wt% of the composition *(page 3, 2nd full paragraph)*;

b. a reactive diluent *(page 3, 2nd full paragraph)* comprising at least one ethylenically unsaturated monomer *(page 4, last paragraph)* selected from aliphatic vinyl, diene, and vinyl toluene *(page 14, 2nd full paragraph),* wherein said ethyenically unsaturated monomer is reactive with said polymerizable vinyl ester *(page 4, last paragraph)* and wherein said diluent is substantially styrene free *(page 3, 2nd paragraph)*;

c. a curing catalyst *(page 5, 2nd full paragraph)*; and

d. activator *(page 5, 2nd full paragraph).*

Claim 1 is directed to an adhesive composition for anchoring materials in or to concrete or masonry. It claims improved adhesive formulations, which provide superior properties compared to other known curable adhesives. The superior properties include low toxicity and strong adhesive bonds even in high temperature conditions. Those features are highly desirable in construction and engineering, especially in the situations where adhesives could be exposed to high temperature conditions.

Dependent claims 13-15, each of which have separate basis for patentability, involve compositions that have certain desirable pull-out performance properties at various temperatures and various cure times. For example, claim 13 requires that the composition have a pull-out performance at one hour and a temperature of 23°C of at least about 60 KN. As described in the present specification at page 20, pull-out performance measures the ability of the adhesive to hold a steel rod in a medium-weight concrete block after certain periods of cure time and at various temperatures. It will be appreciated by those skilled in the art that a composition having the ability to produce such a high pullout force after a relatively short period of time is highly desirable. Moreover, as illustrated by the examples (pages 20 – 22 of the present specification), this value is substantially and unexpectedly higher than commercially available adhesives formulated for this purpose.

5. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants request the Board to overturn the following rejections:

Rejection of Claims 1 and 6 to 15 under 35 U.S.C. §103(a) based on European Patent No. 199,671 (EP '671) and Japanese Patent No. 2001-89716 (JP '716) in view of U.S. Patent No. 4,729,696 to Goto *et al.* (Goto) and further in view of U.S. Patent No. 5,891,942 to Parish *et al.* (Parish).

6. ARGUMENTS

(A) EP '671 Does Not Render Appellants' Claims Unpatentable

EP '671 discloses an adhesive composition comprising polymerizable epoxy resin produced by the bisphenol A epoxide and methacrylic acid, a reactive thinner selected from styrene or divinyl benzene, a curing agent, a filler, and a catalyst.

As the Examiner admitted in the March 2, 2007 Action, EP '671 does not disclose adhesive compositions that include aliphatic vinyl, diene or vinyl toluene as a diluent reactive with the resin, as Appellants claim. The compositions of the invention as now claimed (for example, see claims 13 – 15) have improved pull-out performance, as established by Appellants' data on pages 20-22 of Appellants' specification. The EP '671 disclosure does not teach or suggest that the compositions disclosed therein would have desirable pull-out performance under such conditions. As explained in detail below, the Examiner has provided no rational basis for concluding that the compositions of EP '671 would possess the desirable performance properties achieved by the preferred compositionsnow being claimed.

(B) JP '716 Does Not Render Appellants' Claims Unpatentable

JP '716 discloses, generally, adhesive compositions comprising a polyfunctional monomer (containing multiple double bonds) such as epoxy acrylate produced from the reaction of bisphenol resin, a monofunctional monomer (containing one double bond), a thermoplastic copolymer (a random copolymer of styrene-methylmethacrylate), which is soluble in the monofunctional monomer, an accelerator and a curing agent. JP '716 discloses the use of the epoxy acrylate in an amount of 10 wt% to 94 wt%.

JP '716 does not disclose or suggest any alphatic vinyl, diene, or vinyl toluene as a reactive diluent, as is specified in Appellants' claim. Likewise, Appellants' compositions have desirable pull-out performance(for example, see claims 13 – 15), and JP '716 does not establish a reasonable expectation that its compositions would have such desirable performance. Accordingly, this reference cannot render Appellant's claims obvious.

In brief, JP '716 teaches adhesive compositions quite different from the Appellants' compositions.

(C) Goto Does Not Overcome the Deficiencies of EP '671 or JP '716

Goto teaches a two-chamber cartridge containing an adhesive composition comprising an epoxy resin (such as bisphenol A epoxide), an organic acid (such as acrylic acid), a curing agent, an optional accelerator, and an optional monomer such as styrene or vinyl toluene. That these materials are optional illustrates that the Examiner is picking and choosing among elements in Goto and combining them with the primary references. Such picking and choosing is an improper basis for an obviousness rejection. *In re Arkley*, 455 F.2d 586, 587 – 88 (C.C.P.A. 1972). See also *Akzo N.V. v. U. S. Intern. Trade Comm'n*, 808 F.2d 1471, 1480 (Fed. Cir. 1986). Further, Goto also discloses that the epoxy resin is present in an amount of 40 to 100 parts by weight, which is outside Appellants' range.

Furthermore, Goto fails to teach or suggest the polymerizable vinyl ester of the present application. In particular, Goto does not disclose a polymerizable vinyl ester having the moiety "-R_x-Ar-R_x-" in its chemical structure. Nor does Goto teach the polymerizable vinyl ester existing in the compositions at the weight percentage as now claimed. In summary, Goto teaches adhesive compositions quite different from those of the present application. And Goto does not teach compositions such as Appellants with the desirable pull-out performances mentioned above, and once again there is no rational basis to conclude that the desirable performance properties achieved by Appellants' claimed compositions would be achieved by the compositions disclosed in Goto.

Because Goto discloses different compositions, among other things, there is nothing in Goto or in either of the primary references cited by the Examiner to suggest combining of Goto with either of those other references. And even if the references are combined, there is nothing in the combination of references to suggest or create a reasonable expectation the compositions now claimed would possess desirable pullout performance, much less the specific pullout performance recited in claims 13 – 15. As such, the obviousness rejections must be overturned.

(D) Parish Adds Nothing to EP '671 or JP '716

Parish discloses sprayable coating compositions comprising a resin system, a multifunctional acrylate, a monofunctional acrylate, an accelerator and a curing agent. Parish's resin system consists of a resin (such as bisphenol) and a reactive diluent (such as styrene or vinyl toluene). Parish discloses that the resin reacts with the reactive diluent, the multifunctional acrylate, and the monofunctional acrylate at the same time in curing.

Parish does not teach specifically Appellants' claimed polymerizable vinyl ester. In fact, Parish does not disclose any specific chemical structures for its resin, except to say simply they are epoxy.

Further, Parish does not teach specifically the amount of the polymerizable resin that may be present in the disclosed compositions. Furthermore, because the Parish compositions are coatings, Parish does not mention or suggest at all the particular properties of Appellants' adhesives, such as strong pull-out performance. In fact, there is no basis to expect that coating compositions would even be acceptable for their intended purpose if they were formulated to achieve high pullout performance. Because Parish discloses very little compositionally, among other things, there is nothing in Parish or in either of the primary references cited by the Examiner (or Goto) to make a proper combination of Parish with any one or more of those other references. As such, the obviousness rejections must be overturned.

(E) The Examiner's Obviousness Rejection is Improper under the Law

In light of the above discussion of the prior art, Appellants respectfully traverse the obviousness rejections of claims 1, and 6 to 15, and separately claims 13 – 15, because the Examiner failed to establish a p*rima facie* case of obviousness. As set forth in the MPEP 2143:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skilled in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

In this application, independent claim 1, together with its dependent claims, is patentable over EP ‘671, JP ‘716, Goto or Parish, individually, for the reasons stated above: such publications do not teach or suggest the presently claimed invention, and there is no teaching, motivation or rational basis (except Appellants’ disclosure) to selectively combine those references to reach the compositions that Appellants are now claiming.

Additionally, assuming *arguendo* that a proper combination among EP ‘671, JP ‘716, Goto and Parish can be made (**which it can not**), the Examiner still fails to meet his burden of proving the pending claims of the present application are *prima facie* obvious. Although EP ‘671, JP ‘716, and Goto are directed to adhesive compositions, they nevertheless do not discuss at all the pull-out performance values of their compositions. In absence of any teaching that would lead to a reasonable probability of achieving such exceptional pull-out performance, it is mere speculation for the Examiner to assert that one skilled at art would be motivated to make, or even could make, the adhesive compositions of the present invention in view of EP ‘671, JP ‘716 and Goto.

Indeed, the Patent Office has the burden of presenting ***factual evidence*** that would indicate that the claimed methods are *prima facie* obvious. *In re Lunsford*, 148 U.S.P.Q. 721 (C.C.P.A. 1966). In the absence of such a showing, such a rejection is based upon impermissible hindsight reconstruction. *In re Fritch*, 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992). Therefore, it is improper to reject the claims of the present application based on the disclosures of EP ‘671, JP ‘716, Goto and Parish. Accordingly, the pending claims of the present application are patentable over the combination of EP ‘671, JP ‘716, Goto and Parish.

(F) Claims 13-15 Are Separately Patentable

Rule 41.37 (c)(1)(viii) provides that should an appellant assert that some of the pending claims are patentable over other pending claims that are otherwise grouped together, the appeal brief should note the separately patentable claims under a separate heading so as not to waive any argument of separate patentability. Applicants, of course, have noted the beneficial pull-out performance of their compositions. These values are in fact set forth in Claims 13-15. Accordingly, should the Board conclude that Claims1 and 6-12 are properly rejectable for obviousness by the Examiner over the cited art, the Board should nonetheless find that Claims 13-15 are patentable as these later claims recite features not disclosed or reasonably suggested in the art cited by the Examiner.

8. CONCLUSION

For at least the foregoing reasons, Appellants respectfully request this Board to overrule the Examiner's rejections and allow the pending claims of the present applications, namely Claims 1, and 6 to 15.

Respectfully submitted,

May 12, 2008________
Date

s/Joseph F. Posillico/______________

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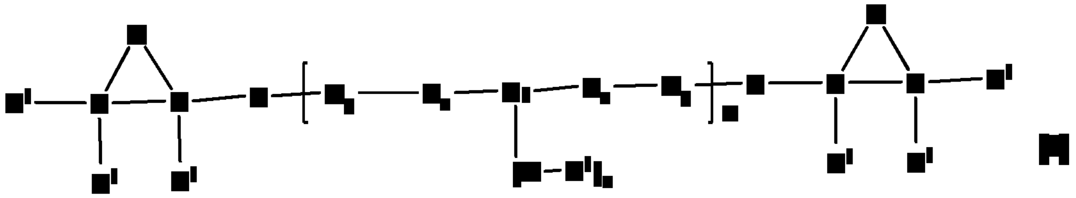
CLAIMS APPENDIX

CLAIMS INVOLVED IN THIS APPEAL:

1. A curable adhesive composition for anchoring materials in or to concrete or masonry comprising:

   a. a polymerizable vinyl ester comprising the reaction product of an epoxy compound and a compound containing an ethylenically unsaturated group, said epoxy compound corresponding to formula (I),



   wherein

   Ar is substituted or unsubstituted aryl,

   R is substituted or unsubstituted divalent radical derived from alkyl, oxyalkyl, arylalkyl, or oxyalkylaryl, alkyl or arylalkyl,

   R^1 is independently H or R,

   for each R_x, x is independently 0 or 1,

   for each O_y, y is independently 0 or 1, provided that x and y are not both zero,

   for each $(O\text{-}R^1)_z$, z is independently 0 to 4, and

   n is from 1 to 5;

   wherein said polymerizable vinyl ester is present in the composition in amounts of from about 10 wt% to about 25 wt% of the composition;

   b. a reactive diluent comprising at least one ethylenically unsaturated monomer selected from aliphatic vinyl, diene, and vinyl toluene, wherein said ethyenically unsaturated monomer is reactive with said polymerizable vinyl ester and wherein said diluent is substantially styrene free ;

   c. a curing catalyst; and

d. activator.

2-5. (Cancelled)

6. The adhesive composition of claim 1 wherein said reactive diluent comprises vinyl toluene.

7. The adhesive composition of claim 1 wherein said weight ratio of vinyl ester to said ethylenically unsaturated monomer is from about 0.8:1 to about 3:1.

8. The adhesive composition of claim 7 wherein said reactive diluent comprises vinyl toluene.

9. The adhesive composition of claim 8 wherein said reactive diluent consists essentially of vinyl toluene.

10. The adhesive composition of claim 1 wherein said weight ratio of vinyl ester to said ethylenically unsaturated monomer is from about 0.8:1 to about 1.5:1.

11. The adhesive composition of claim 10 wherein said reactive diluent comprises vinyl toluene.

12. The adhesive composition of claim 11 wherein said reactive diluent consists essentially of vinyl toluene.

13. The adhesive composition of claim 1 having a pull out performance at one hour at a temperature of 23°C of at least about 60 KN.

14. The adhesive composition of claim 1 having a pull out performance at about 24 hour at a temperature of 23°C of at least about 70 KN.

15. The adhesive composition of claim 1 having a pull out performance after about 24 hours at a temperature of 80°C of at least about 45 KN.

16-45. (Cancelled)

EVIDENCE APPENDIX

No additional evidence is presented.

RELATED PROCEEDINGS APPENDIX

None